

Gray. (L. C.)

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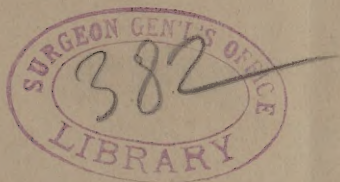
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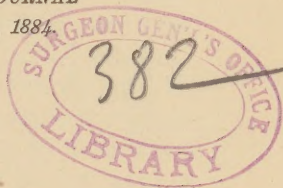
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THE TREATMENT OF EPILEPSY.*

I HAVE been surprised, in passing among medical men, to learn of the prevalence of the belief that the treatment of an epilepsy is either useless or only temporarily beneficial. Had this opinion been confined to the ill informed smatterers who saunter into every calling, and who can be found upon occasion even in our learned profession, I should not have wondered; but I have also found it largely among earnest, honest, well-read practitioners, whose knowledge of general medicine and surgery was fairly equal to the emergencies of their career. Yet it was, as is usually the case, pure lack of reflection that made me feel surprised. Neurology is the latest of all the specialties. Ten years ago but a few colleges in the United States had any systematic course of instruction in nervous disease; and even to-day, while gynecology, for instance, is made to rank in importance with midwifery, and graduates go forth flourishing a speculum with a nonchalance that has been bred in many lectures and many operations, the broad and complex study of mental and nervous phenomena is relatively disre-

* Read before the Medical Society of the County of Kings, May 20 1884.

garded, unless the eminence of some particular lecturer should gild his specialty with a local splendor. Only lately has it been, moreover, that text-books upon the subject have been sufficiently salable to kindle the desire of publishers. Probably, too, great as has been the development—almost entirely in Germany and France—of knowledge in the anatomical, physiological, and pathological aspects of neurology and psychiatry, made with such scientific elaboration and deliberation as have been rendered possible by magnificently endowed and equipped institutions of learning, enough time has not elapsed to naturalize the specialty in England and America for the utilitarian and therapeutic purposes which are more in consonance with Anglo-Saxon habits of race and social organization. The physician, therefore, who, uninstructed at the start, has left a medical school to plunge into the active duties of practice, has not had conveniently at hand the wherewithal to supply him with the well-sifted information which he can readily obtain upon other professional topics. I have consequently been led to conjecture that a paper upon the treatment of a disease so baneful and so frequent as epilepsy would be of interest to many, and possibly also of service, should the modifications and regulations which clinical experience has taught me to make in regard to many familiar details prove as timely as I have fondly believed them to be.

There are certain peculiarities about epilepsy with which one should be acquainted before justifiable deductions can be drawn from any method of treatment, and these have been almost entirely overlooked by authors.

In the first place, epilepsy is a very mobile disease. By this I mean that it reacts very readily to impressions made upon it, whether those impressions travel to it from the stomach, along the nerves of general or special sensation, or from the cortex of the cerebrum. Almost any change

of treatment will produce a temporary effect. Hence it is that so many remedies have been vaunted for its cure. Hence it is that M. Brown-Séquard thought he obtained better results after adding the bromide of ammonium or the bromide of sodium to the bromide of potassium, just as Dr. E. C. Seguin has lauded the addition of chloral hydrate to the bromide of potassium. Hence it is that trephining, removal of cicatrices, operations upon the male and female genitals, and nerve-stretching, have brought a seeming success for the time being, and interjected so many false data into our therapeutics. I am somewhat given to referring to the case of a chronic epileptic in one of our city institutions who, being subject to convulsions every few days, fortunately fell into a tub of hot water, burnt himself severely, and had never a fit for upward of a year. After I had been teaching this mobility of epilepsy for some time, I came across the following passage in Esquirol's great work, showing that the fact had been familiar to him, although it would seem to have escaped the attention of all other writers upon the subject:*

"I have treated three hundred and eighty-five women or girls, of all ages, past puberty, belonging to the poorer classes. Of this number, forty-six were hysterical and three hundred and thirty-nine epileptic; the majority were more or less chronically insane. . . . I desired to test the efficacy of the most varied remedies. I tried successively blood-letting, purgatives, baths at every temperature, issues, the cautery, moxas, antispasmodics—both vegetable and mineral. I stopped with hydrocyanic acid. I procured or bought the secret remedies. Every spring and every autumn I chose thirty epileptic women with whose disease I was best acquainted, as regarded the past, the causes, and the symptoms. These women were prepared in advance by exciting their imagination by the repeated promise of a certain cure.

* "*Maladies mentales*," etc., Paris, 1838, t. i, p. 136.

I was efficiently seconded by the nurse and the internes. In all cases a new medication suspended the attacks during fourteen days in some, during one month or two in others, and even three months. After this period the attacks reappeared successively in all the women, with the characteristics which they had presented for years before. Several of our epileptics were subjected to my experiments for years; but I must confess that I was unable to obtain a cure. In my private practice I have been scarcely more fortunate; if the attacks were suspended, it was less from the action of the medicaments than from the effect of the confidence which led the patient to consult a new physician. . . . Authors have mistaken for cure the spontaneous suspension of the attacks, or their suspension by the action of every new remedy; the error is the more possible because the patients are lost to the sight of the physician, who is not consulted upon the return of the paroxysm."

And then this thoughtful and patient student of diseased nature cites a number of cases in support of his views. Among them this one, which may be *apropos* :

"The Prince of —, epileptic since early youth, would permit no one to wait upon him, in spite of the entreaties of his family. With the progress of age the attacks became more frequent; when fifty-seven years old, the Prince was taken with a paroxysm, during which his head fell into the fire. The burn, charring the scalp, penetrated to the external table of the parietal bones. An abundant suppuration was established. The wound was kept open by a bit of necrosed bone. The patient, becoming impatient, sought the aid of a surgeon, who removed the bony fragment, when the cicatrization proceeded rapidly, and was completed in forty-two days. During this time the patient had no attack, but immediately after the healing of the wound the fits recommenced."

Epilepsy is very often quasi-periodical. The ensuing cases will best illustrate my meaning :

K. T., aged fifteen, girl. Grand mal for two years. Attacks

about every six weeks, *always, with two exceptions, between 7 and 8 A. M.*

E. G., male, aged twenty. Grand mal for eighteen years and a half. Attacks daily, *always, with three or four exceptions, upon rising from bed in the morning.*

R. C., aged nine, female. Grand mal over a year. Fits several times weekly, *invariably between 11 P. M. and 7 A. M.*

P. S., aged eleven, female. Grand mal for over a year. Attacks generally once in the month, occasionally twice, *always about 7 A. M.*

W., aged thirty, female. So-called "Jacksonian epilepsy" for fifteen years. *Twitchings always between 12 P. M. and 4 A. M.*

D. M., aged forty-one, male. Grand mal for three years. *Attacks always between the seventeenth and twenty-fifth of the month, and always between midnight and breakfast time.*

Female, aged nineteen. Grand mal for six years. Attacks at the menstrual period, generally about the first of the month.

Male, aged twenty-nine. Fits always one half to three quarters of an hour after rising in the morning.

Male, aged twenty-five. Fits about the time that the moon is becoming full.

Male. Has had three fits, each about eighteen months after the preceding one.

In what proportion of cases this quasi periodicity occurs I am, unfortunately, not able to say, since the cases in which I have sought it, and in which the memory of the patient or the patient's friends has been reliable, have not exceeded forty, a number too small for a scientific deduction of this kind. Of this forty, however, nine manifested these symptoms. I regard it as scarcely necessary to state that I have always carefully excluded malaria as a possible cause of this quasi periodicity.

Epilepsy is often inter-convertible with migraine; that is, a migraine will often have its place taken by an epilepsy, and *vice versa*; and, in individuals hereditarily or personally predisposed to epilepsy, migraine will often precede the

graver disease by months or years. I am inclined to believe that the majority of patients with migraine will have occasional losses of consciousness, attacks of great dizziness, or other nervous symptoms that are of a graver type than the mere migraine.* While these facts are not unknown to neurologists, they may be new to many of my readers, and the ensuing histories may be pertinent:

Male, aged forty-five. Has had migraine since he can recollect. Two sisters subject to it. Four years ago began to have epileptic convulsions—grand mal. Became rapidly worse; developed occasional attacks of furor epilepticus, and is now a hopeless epileptic, dangerous at all times because of certain fixed delusions, and uncontrollable when the mental aberration appears.

Female, aged fifty-three. Migraine for five years. During last year has had, toward the latter end of the attack, violent movements of the muscles of the trunk, so that the body is violently straightened up into an erect attitude.

Female, aged twenty-three. Been subject to migraine ever since she was a little child, coming on once or more weekly. Has lately, since birth of last child, become, temporarily, almost blind during these headaches. Father was subject to migraine. For the last week has had attacks of "fainting," in which she does not entirely lose consciousness, but is unable to move. These come on suddenly, without apparent cause, and have greatly alarmed her.

Male, aged thirty-six. I know nothing of the hereditary history. Has been for many years subject to severe and well-

* By migraine I mean that form of headache, usually unilateral, which recurs in certain individuals at regular or irregular intervals and lasts from twelve to twenty-four or thirty-six hours, occasionally even longer. It is to be distinguished from neuralgia by its relatively short duration, by the persistence of these recurrences through years, by the prostration attending it, usually profound, by its gradual increase to a culmination which is characterized by severe, generally agonizing pain, and also, as a rule, by emesis.

marked migraine. In last two years has had two attacks, consisting of sudden loss of consciousness, so complete that patient fell, injuring himself, and had no recollection afterward of the occurrence.

Female, aged thirty-four. One sister was an epileptic and was insane for some years before death. Mother died of apoplexy. All her life subject to migraine, generally severe in character. Has repeatedly, while the headache is upon her, lost consciousness of her surroundings, so that several hours remain a blank to her; and she has, upon a few occasions, been mildly maniacal immediately after a headache—i. e., after the culmination in emesis has taken place and the pain has become bearable.

Female, aged about forty. Subject to migraine since childhood. Latterly has had epilepsy, grand mal mainly, occasionally petit mal. Has been coming to my clinic for some two years. Whenever her epilepsy grows worse, the migraine improves, and *vice versa*. One alone being treated, the other grows worse. When both are treated, she goes for long periods without fits or headache.

From a prognostic point of view, however, there is a vast difference between these epileptiform attacks occurring in migraine and true epilepsy. The baneful effects of true epilepsy upon the mental structure are familiar to us all. The gradual weakening of all those delicate and only periphrastically describable mental manifestations which lift a human being to the higher planes of intelligence and constitute what we English-speaking peoples have agreed to call "character"; the gradual passage into absolute dementia; the supervention of convulsions or attacks of *petit mal* that seriously interfere with the active businesses of life—all these, which are so frequent in true epilepsy, are very infrequent in migraine. Fortunate, indeed, is it that this is so, for migraine is a very widespread disease, and scores of the most active and useful human beings among

us are the bearers of it. If I were at liberty to do so, I think I could read off a startling list of names of sufferers to be found in many different walks of life in this city of Brooklyn. Perhaps I can give you a better idea of how I have come to regard migraine if I tell you where I classify it. I regard epilepsy as a nervous disease of very serious import to the mind, and, at times, to the general nervous system. I regard neuralgia as a nervous disease localized in one nerve or one set of nerves, and whose prognostic importance is usually only that of the pain which is produced. I place migraine midway between epilepsy and neuralgia—a localized neurosis, so to speak, or a neuralgic neurosis, or a neurotic neuralgia. Most cases remain midway between epilepsy and neuralgia, manifesting more severe symptoms than a mere neuralgia, but yet not so severe as those of epilepsy, occasionally, however, when the attacks are more frequent or more painful than usual, manifesting epileptiform symptoms. This is the type. But many cases approximate more nearly in character to neuralgia, frequently differing from it for years only in the relatively short duration of the attacks, the irregularity and often the suddenness of their onset, the tendency to commence as a vague feeling of weariness or unrest, generally in the morning, the culmination, in a few hours or toward night, in sharp pain, with or without nausea, and the relative triviality of the causation, such as moderate fatigue, a change in the barometer or thermometer, some passing emotion of more than ordinary intensity, some slightly unusual excitation of a special sense, as a disagreeable odor, straining of the eyes, etc. Finally, there are some quite exceptional cases in which the symptoms partake strongly of the epileptic character, or else the migraine actually becomes inter-convertible with true epilepsy, as in the cases which I have narrated. I have, therefore, called attention to this kinship between

migraine and epilepsy, not so much on account of the prognostic aspect of the matter—although, as we have seen, that can not be entirely disregarded—as because of the therapeutic considerations, of which we shall take account further on.

The frequency of epileptic fits varies enormously in different persons and at different times, as is shown by the history of a number of my cases, taken at random from among those in which the course of the disease had not been altered by treatment, so far as I have been able to ascertain :

1. Fits about every six weeks. Duration two years.
2. Before six years ago only one or two fits yearly ; lately once weekly, occasionally two weekly ; sometimes goes over the month ; once free for nine months while at the clinic, while under treatment with the bromides. Duration eighteen years.
3. About once in three weeks. Duration four years.
4. Several weekly. Duration one year.
5. Three or four daily for the first three months ; since then one weekly or biweekly. Duration four years.
6. Duration six years. Formerly two or three daily ; now one monthly, about the menstrual epoch.
7. Duration about two years. About one weekly.
8. Duration six years. For three years, four or five monthly ; during next two years, one or two yearly ; in last year, two.
9. Duration ten years. Second fit about nineteen months after the first ; third, eighteen months after ; next, after one year's interval ; then for some time—not more definitely stated—about three to four months ; then none for fifteen months ; since, about once in three or four months.
10. Duration twenty-nine years. At first three fits in six weeks, *then none for ten years* ; but muscular twitchings, without any loss of consciousness, often several times in the week ; then seven violent fits in succession ; was unconscious several hours ; then none for three years, but twitchings ; for next five years, one every two to three months ; no fit for six years, but

twitchings; for two years one every two months; in last three years about four fits, but no muscular twitchings.

11. Duration fourteen years. About three monthly.

12. Duration about four years. Fits vary in number from one weekly to seven daily.

13. Duration about one year. At first about two weekly, then free for seven months.

14. Duration two years and a half. Never two weeks without them; occasionally several in a week.

15. Duration fifteen years. About one a month.

16. Interval between first and second fit over five years; interval between second and third fit, fifteen years; then about two monthly; then once in four or five months; eight in the last thirteen months.

The periods of time that elapse between the first and second fits are extremely variable, extending, at times, over years. Thus Gowers* has analyzed 160 cases with the following results:

Interval between the First and Second Severe Fit in 160 Cases of Epilepsy.

Less than 1 week.....	18	} 55 cases under one month.
1 week to 1 month...	37	
1 month to 3 months...	13	} 52 cases more than a month and less than a year.
3 months to 6 months..	21	
6 months to 1 year....	18	
1 year to 2 years.....	18	} 53 cases more than a year.
2 years to 3 years.....	6	
3 years to 5 years.....	7	
Over 5 years.....	22	

Viz:

6 years	3 cases.
7 years	9 cases.
8 years	1 case.
10 years	3 cases.

* "Epilepsy," London, 1881, p. 190.

11 years	1 case.
14 years	1 case.
16 years	1 case.
18 years	2 cases.
20 years	1 case.

“According to these figures,” continues the author, “in one third of the cases the second attack occurs within a month; in another third it is postponed until after a month, but occurs within a year; while in the remaining third more than a year elapses between the first and second fit. I think it probable that these figures exaggerate the relative frequency of prolonged intervals, since in such cases the facts are more likely to be noted; but they serve, at any rate, to show that the risk of a second fit remains considerable for at least twelve months after the occurrence of the first fit, and that, although it rapidly falls after the second year, it does not practically disappear until after ten years have passed, while cases are occasionally met with in which a still longer period—fourteen, sixteen, eighteen, and even twenty years—elapses.”

What prognosis are we, then, to give in such a case as the ensuing one?

T. C., aged nineteen, house painter. Had a fit the night before coming to me. Attributes it to the fact that he had been masturbating the day before. While walking along the street, looking at some painters, he suddenly saw before him rings revolving, which grew smaller and smaller, when he lost consciousness. Was told that he foamed at the mouth and gripped his hands together. Afterward slept about four hours. Has been a masturbator for the last five years. Never had a fit before. No signs whatever of any renal trouble, which was carefully sought for by chemical and microscopic tests, nor any ascertainable organic disease. As he had a phimosis, I circumcised him. This was over five years ago, and during this time he has had no other fit.

The waning school of enthusiasts, who fondly regard genital irritations as the fertile source of all diseases in which there is a possibility for diagnostic error, will, no doubt, explain this prolonged immunity in accordance with their darling theory; but the figures which I have just read will not permit of any such hasty conclusion. Time alone can tell whether this patient is to have another convulsion. For aught we can predict to the contrary, he may, like Gowers's patient, have another convulsion twenty years after the first.

The thought would naturally suggest itself that we might, by careful analysis of a sufficient number of cases, be able to formulate some law in this matter of intervals between the fits, and thus build up a system of averages. Gowers, indeed, believes that he has done this. But his tables attest the truth of the time-worn saying, which has been imputed to Sidney Smith—and which would have done him no discredit either—that nothing is more unreliable than facts, except figures. In these tables the cases are divided into those in which the interval does not exceed one day, those in which it is more than one day but not over one week, those in which it is over one week but not exceeding two weeks, etc., and the number of cases in each class is then ascertained, when, of course, it is a simple matter to compute the percentage of each class to the whole. If my reader will take the trouble to run over the cases in which I detailed the intervals, or, far better, if he is familiar with epileptics, he will readily appreciate that one and the same epileptic may have intervals varying so greatly in length of time as to put him, if he lives only a few years, into every one of the eight classes which Dr. Gowers has so uselessly constructed. I fail, therefore, to see how it is possible to obtain any averages in so capricious a disease as epilepsy, unless a large number of patients can be kept under observa-

tion for periods of ten years and more, without the disturbing influences of treatment of any kind. This is, of course, impracticable in the ordinary forms of the disease, such as are relatively amenable to treatment, and can only be carried out with those hopeless wretches who are huddled into our public institutions.

It is very much the custom to pay slight attention to convulsions occurring in young children, and to easily dispose of them by attributing their causation to some coincident, or precedent, or ensuing phenomena—as dentition, indigestion, etc. Indeed, one recent writer* has advanced the axiom that convulsions after the third year are very probably epileptic, while, under the third, any such attacks are probably eclamptic. There seems to me to be great fallacy in these terms and these conclusions.

Eclampsia, it is well known, is but a term that is sanctioned by usage to designate a convulsion occurring in children or from some unmistakable cause—as pregnancy, uræmia, organic cerebral disease, etc.—ceasing upon removal of the cause, and seldom leading to general and gradual deterioration of the mental faculties. Eclampsia is, in other words, an acute convulsion, relatively innocuous. Epilepsy, on the other hand, is a term denominating a series of convulsions usually occurring at intervals throughout some period of time, and entailing serious alteration of the mind and nervous system; or, in brief, epilepsy is a chronic convulsive disorder. The one is, by itself, so far as the single fit is concerned, clinically indistinguishable from the other. Eclampsia may, therefore, very properly be said to be an acute epilepsy, and epilepsy to be a chronic eclampsia. How, then, are we to tell, when confronted with a convulsion in a child, either below three years of age or

* "Importance of the Early Recognition of Epilepsy," E. C. Seguin, M. D., "Med. Record," Aug. 6 and 13, 1881.

above, whether we are in the presence of epilepsy or not? We may weigh probabilities—that is, we may guess, and guess *ad libitum et in infinitum*, but we can not be certain. The convulsion may never be repeated, or repeated a few times only during the years of childhood, or it may recur at varying intervals throughout the passing years, until the dread conviction steals over us that the *morbus sacer*, the fell disease of the inscrutable gods, is indeed before us. It would be most consistent with facts to regard every convulsion in childhood with solicitude. The following cases will, I think, substantiate these statements:

Male, aged twenty. Grand mal once or twice yearly since he was a year and a half old.

Male, aged five. Grand mal since one year of age.

Male, aged ten. Grand mal since one year old.

Female, aged eight. Had convulsions when about three years old. None again for six years. The next interval was about eleven months, and the last interval, before coming to me, about three weeks.

Female, aged thirteen. Had a fit when about eighteen months old, while cutting her teeth; another, when four years old, during scarlatina. None again till the eleventh year, since when patient has had grand mal.

Female, aged three. Has grand mal, which began when she was six months old.

Female, aged twenty-three. When about eighteen months old had a fit, ascribed to eating pickles. Another in seventh year, attributed to the same cause. About thirteen months after this fits began to come steadily, and she has now grand mal.

Gowers,* speaking of the same aspect of the question, says: "A large number of cases, no less than twelve and a half per cent. of the whole, commenced during the first three years of life. In this group no cases of simple infan-

* *Op. cit.*, p. 14.

tile convulsions are included, only such as, beginning in infancy, continued as chronic epilepsy. There is a difficulty in ascertaining the exact date of commencement in all cases. Of about one third, all that could be learned was that they began in infancy. . . . The number of cases is largest in the first year (five and a half per cent. of the whole), and falls rapidly to three years of age, and then more slowly until five, when the minimum for the early period of life occurs—only one seventh per cent. commencing.”

Dr. Gowers obtained these figures from an analysis of 1,450 cases.

Occasionally it will happen that a seeming malarial attack will, in a person predisposed to epilepsy, be the immediate cause of the attacks, which will cease upon treatment of the seeming malaria.

R. D., aged fourteen. Lives in a malarious district. About six years ago had two or three fits. None since, until a late attack of malaria, which appears every week in the afternoon—which day can not be ascertained, nor as to whether there is regular periodicity—being characterized by the typical cold, hot, and sweating stages, during which the fits have again occurred; never at any other time. There is an abdominal aura with cry, unconsciousness, foam at the mouth, clonic convulsions, but no sleep afterward; only a yawning and wearied feeling. Tongue clean; bowels regular. The child was placed on a milk and farinaceous diet, was given a cholagogue, alkalies, later on a bitter tonic, and had no return of the fever or fits for five months that it remained under my treatment. I know nothing of its subsequent history.

The question of epilepsy from so-called reflex irritants is one of some clinical importance. As we have seen, epilepsy is readily influenced by many reflex impressions; so that we can comprehend that—as I know to be a fact from oft-repeated experiences—a circumcision, a removal of pre-

putial adhesions, a divulsion or cutting of urethral strictures, a clitoridectomy, an operation upon the vagina or uterus, a nerve-stretching, a trephining, may each have a temporarily beneficial effect upon an epilepsy. But do genital or other reflex irritations ever cause an epilepsy? This is a matter as yet *sub judice*. I have never seen epilepsy caused by genital irritations, or heard of it, although I have both seen and heard of cases alleged to have had such a causation, in none of which, however, had the foregoing considerations been sufficiently weighed to render the proof adequate. It would certainly seem that distinct irritation, as by tumor, of peripheral nerves could set up epilepsy, and especially has this been so in those cases of laryngeal epilepsy or vertigo induced by tumors of the vocal cords.* Other than this, the subject needs elaboration.

We should, therefore, keep this picture of an epilepsy clearly before us: Easily influenced by manifold impressions, whether of medicaments or upon nerves of general or special sensation; occasionally quasi-periodical; occasionally inter-convertible with migraine; often occurring at long intervals, generally at very irregular intervals; occasionally manifesting itself, to all appearance, in a solitary convulsion; occasionally beginning in early childhood or infancy; at times seemingly stimulated to activity by malaria; possibly caused by special reflex irritations.

I presume it will be understood that I am referring throughout this paper to that form of epilepsy which is functional in the sense that it is not caused by underlying recognizable organic disease of the brain or cord. Epileptic convulsions—or, as they should be styled, *epileptiform* convulsions—that proceed from intra-cranial syphilis, myelitis,

* "Laryngeal Epilepsy," L. C. Gray, "New England Med. Monthly," Nov., 1882.

disseminated sclerosis, meningitis, tumors of the cerebro-spinal axis, vertebral disease, etc., constitute an entirely different group of symptoms, as need hardly be said.

I know of no writer who has taken full account of all these characteristics of epilepsy. Yet there can be no question whatsoever but that no just conclusions can be based upon the results following any method of treatment unless all these characteristics are kept in mind. An interval of ten or twenty years may be ascribed to some pet method of treatment, doubtless often has been, by one ignorant of the fact that cases may run in this way when left untreated; or an epilepsy, inter-convertible with a migraine, may temporarily seem to improve to one who is not alive to the fact that the migraine is growing worse, and may do the patient as much harm as the unchecked epilepsy; or enthusiasts may laud to the heavens some new operation—such as the latest surgical novelty of tying the vertebral artery—some varying time after which the epilepsy is better; or other enthusiasts may, in like manner and with like reason, claim cures for new medicaments.

The treatment of epilepsy should, therefore, embrace many other details than the mere administration of drugs. Anything that might possibly act as a cause or an excitant must first be sedulously sought for, and, if it is possible to do so, it should be promptly removed. Even though we can not bring ourselves to believe that it is adequate to set the epilepsy agoing, we should have no right to indulge our doubts at the possible expense of our patient. In the terse phrase of the lawyers, we should give our patient the benefit of the doubt. The simple question should be: Is the removal of the possible cause or irritant likely to do more harm than its presence? If not, it should be removed. For this reason I always remove all genital irritations, either of the male or female, as well as all peripheral irritations of

any kind. In cases of injury to the skull, when there is reason to suspect a fracture of the inner table, or some intra-cranial disease beneath the point of injury, I believe that the trephine should be used unhesitatingly. The operation is attended with little danger, by it some serious irritant may be removed, and, even in the event that no focus of mischief is discovered, temporary improvement will be almost certain to follow. In other words, the operation may do great permanent good, is almost certain to do considerable temporary good, and is almost certain to do no harm.*

The natural course of the particular epilepsy which we are treating should also be studied. We should gain as accurate an idea as possible of the frequency of the fits; whether they are of the nature of *grand mal* or *petit mal*; what relation in frequency the attacks of *grand mal* bear to those of *petit mal*; whether there intervene mere muscular twitchings or mere vertigo, and how often; what the intervals are between the different individual fits and the different groups of fits; how these intervals vary from time to time in their average, and their minimum and their maximum. In endeavoring to ascertain this, it will not do to trust entirely to the patient's memory, for not only is that defective, but the patient can not, of course, know anything of what transpired during his unconsciousness except what is afterward told to him. I make a rule, therefore, of obtaining this history from some near relative.

In the treatment of the epilepsy itself, the bromides certainly seem to be the remedies that are most effective. If statistical proof be asked in support of this opinion, it would be impossible to give it, because almost all the statements of writers are full of the errors that I have alluded

* I hope, at some future time, to dwell at length and in detail upon the considerations that should prompt the use of the trephine.

to. Indeed, I can not conceive how it would be possible to prove the superiority of one anti-epileptic treatment over another unless it should happen, as it has never done, that some one treatment promptly cured the disease outright. In order to carry out such a comparison of treatments, we should need at least fifty to one hundred patients for each particular method; and if we were only to test the drugs that have their advocates at the present day—the bromides, belladonna, oxide of zinc, nitro-glycerin, borax, digitalis, ligature of the vertebral artery—we should require three hundred and fifty to seven hundred patients. The imagination stands appalled at the myriads of victims who would be needed to set at rest the conflicting claims of all the remedies that have been popular at different times. It would not do to go into our public institutions for these, inasmuch as such patients consist of the most inveterate, generally hopeless, cases. We must depend, then, for our human supply upon out-door clinics and our private practices. But, even supposing that this number of patients could be seen in private practice and out-door clinics, it would be simply impossible to keep them under observation long enough to be certain of results. The basis for the statement of this superiority of the bromides is in the widespread professional belief to this effect. Many other remedies have worked seemingly brilliant results. The great Trousseau narrates some excellent cases in which belladonna has been very effective. Schroeder van der Kolk gives some remarkable accounts of how he successfully managed apparently hopeless cases by means of issues and setons. Kuntze speaks of great improvement from the administration of woorara. But of no one drug is the testimony to its efficacy so great as it is with the bromides. From all countries, in many languages, by specialists and non-specialists, the praises of the bromides are sung. Yet, while I

believe that this wide-spread belief is fair evidence that the bromides are superior to other remedies, I can not admit the cures that are claimed for them, because, as I have endeavored to demonstrate in this paper, cases are seldom kept under observation long enough to make sure of a cure, and also because we can only determine approximately, in any given individual, what shall be called a cure.

The abundant physiological researches that have been made into the action of the bromides, more especially of the bromide of potassium, have made clear that their chief effect is as a depressant of certain involuntary reflexes. Thus, a frog poisoned by this method could not be made to exhibit ordinary reflex actions at the same time that all voluntary movements were properly performed. H. C. Wood, whose *résumé* of the subject is painstaking and judicious, believes that this depression of reflex action is due mainly to the effect of the drug upon the spinal cord. Large doses depress the heart—whether from direct action upon the organ itself, or from an abolition of the reflex of the cardiac centers, is as yet undecided.* Clinical evidence, supplementing the physiological, has shown that the bromides will abolish the pharyngeal reflex without any simultaneous impairment of sensation, will greatly impair the memory, may even cause a spurious aphasia, will weaken the intellect, depress the spirits, impair digestion, depress the vaso-motor system, produce great muscular weakness, and, in some exceptional instances, superinduce maniacal excitement.† The bromides would therefore seem to be depressants of certain portions of the central nervous system, such as are necessary for the performance of certain reflex actions. Ordinarily this sedative action is one that is remarkably safe as regards life. I have repeatedly given children as much as 3 ij to 5 ss. of

* H. C. Wood.

† Bannister.

potassium or sodium bromide daily steadily for months with good results, and I am constantly giving these doses to adults for long periods of time. In testing a plan of treatment recommended by Dr. Gowers, I have several times given an ounce of the potassium bromide at one dose, with no other result than to lower the pulse some twelve to eighteen beats for a few hours.

But there are certain individuals, constituting a very troublesome minority, who are dangerously susceptible to the action of the bromides. An epileptic patient of mine, a boy of ten, although robust in appearance, was yet reduced to a condition of imbecility and such general weakness that he could not rise from bed by a three days' treatment with ten-grain doses of the bromide of potassium. He passed out of my care into the hands of a gentleman who ordered him to take the bromide for three months. He took to bed as before, and, when he came out of it, he went to Greenwood Cemetery. An epileptic, demented youth was brought to my clinic. I ordered him a mixture containing potassium bromide, gr. xv, and sodium bromide, gr. x. I was sent for in hot haste shortly after he had taken his first dose, found him in a state bordering on collapse, and had great difficulty in restoring him. I saw in consultation, some three years ago, a young lady who had had a few epileptic attacks, for which she had been steadily treated with large doses of the bromides during a period of about six months. She was in bed, almost pulseless, pallid, thin, exhibiting great mental sluggishness, being made to answer questions with great difficulty, weeping at times without cause, somnolent. Her life had been despaired of, and two eminent gentlemen had made a diagnosis of grave organic nervous disease. I recommended the withdrawal of the bromides, the substitution of stimulants, tonics, and a nourishing diet, and the patient was about in a few weeks. A professional

gentleman who consulted me had had some commingled malarial and lithæmic symptoms which had been diagnosed as cerebral congestion, and the bromide of potassium was ordered. It was taken for about four months, in twenty-grain doses thrice daily. The result was to impair a naturally fine and unusually vigorous mind to such a degree that the memory was seriously affected, an emotional state was induced to such an extent that weeping would follow the most trivial incident, and most of the day was spent in sleep. I have never seen a more pitiable spectacle than this naturally energetic, robust, and keen-minded individual after four months of this accused treatment. A few weeks of tonics, stimulants, and good diet restored his tone to a large degree, but it was fully two years before he recovered his former energy of mind and body. I am constantly seeing such cases as these, and, together with other ill results that have come to my notice from the wholesale use of the drug at the present day, they have made me seriously aware of the fact that the bromides are necessary evils. We should so regard them in the treatment of epilepsy. Not one grain more should be given than is absolutely necessary.

I usually begin the treatment with ten-grain doses of the potassium bromide twice daily, and double the dose at night, as suggested by M. Brown-Séquard, because the interval between the evening and the morning doses is longer than that between any others. The quantity is gradually increased by five grains at a dose every few days until the pharyngeal reflex is abolished or the attacks diminish. This abolition of the pharyngeal reflex, which was first suggested as a criterion by Voisin, can be tested by means of a spoon or a spatula touching the pharynx. In the majority of cases, when this is abolished it is safe to stop increasing the dose, because, for a time at least, the epilepsy will be held in check. But it is by no means the infallible test that it

is stated to be. It will often be abolished without the epilepsy being affected to any great extent; or, in other instances, the epilepsy will improve long before it is abolished. If, then, this reflex of the pharynx disappears, I pause in the dosage, and wait to see whether the symptoms improve. Should the symptoms improve before this reflex disappears, I also pause in the dosage. I then begin to habituate my patient to the dosage to which I have attained, which, by the by, varies very greatly with different individuals. Usually by this time the patient shows distinct signs of bromism, pallor, quicker and weaker pulse, dull visage, perhaps a foul breath, sometimes drowsiness in the daytime. The next problem to which I set myself is to drive off these so-called signs of bromism without at the same time diminishing the influence of the bromides over the epilepsy. This seems paradoxical at first sight, but I know that it can be done, as I pointed out several years ago,* and I do it by the addition of alteratives and tonics—if need be, even of stimulants—to the bromides. If the individual is in very poor general health, I use tonic doses of quinine for a few days; and I do this in some cases from the start. But the larger number of patients do best upon cod-liver oil and arsenic, or iron, if there is any anæmia. I always look carefully after the diet, seeing to it that they obtain as much nutritious food as their age, habits, race, heredity, circumstances, and health will enable them to properly digest and assimilate. I am forced to put the matter in this general way, because, were I to go into all the dietetic details, I should write another paper as long as this.

This process of getting the patient habituated to the bromides is one that requires a variable time in different persons. As a rule, it is done in about a month, but some

* "The Use of Quinine with Nervous Sedatives," "Arch. of Med.," Oct., 1880.

organisms will tolerate the drug well almost from the start, while with others it needs months, and upon some it will have such pernicious effects that it must be discontinued at once.

Having habituated the patient in this manner, I let him go steadily along without any alteration in his medicines until the improvement shows some signs of arrest. Then, if the patient has so far borne the bromides well, I increase each dose by five to ten grains. If, after another period of improvement, there again comes a relapse, I push the dose still further, and, if need be, increase it again and again. Sooner or later, however, a point will be reached when it becomes evident that it would be dangerous to increase the dose, and still the disease is evidently not entirely under control. For a long time I was baffled when I reached this point. But I ascertained that if now, without diminishing the dose that we have been giving, we administer some other of the drugs that have been found to be anti-epileptic, we can usually hold the malady still further in check. Of these adjuncts, I prefer, in the order in which they are named, sodium bromide, belladonna, digitalis, borax. With the ammonium and lithium bromides I have had too limited an experience to enable me to speak positively, although I think they will act about as their sodium fellow does. The oxide of zinc has not been successful in my hands. I like the digitalis in asthenic cases, and the belladonna in children. Ringing the changes upon one or the other of these drugs, I keep steadily on with the treatment so long as I maintain a control of the epilepsy. By this time it is generally the case that the better part of a year has passed by, or even a year or two. When it becomes plain that the epilepsy is slipping from control, I proceed to make some radical change in the treatment. Should the patients' circumstances permit it, I have them obtain an entire change of air. To others I give a

vigorous emetic, or a sharp purgation, and follow it up with a decided change in the diet; and then I begin another long course of treatment with another of the drugs which I have named, making the others act as adjuvants from time to time, but in a different order from that in which they were given before.

With this method of treatment, I find that I am able to keep under control most of the cases of epilepsy that are brought to me. I do not pretend to have made absolute cures. Some of my patients have gone long times without fits: one over three years, and several for two to three years.

The quasi periodicity to which I have alluded has often a practical importance. Where these quasi-periodical attacks are far apart, as every month or at longer intervals, it may be possible to control them by administering the bromides at about the time when they are to be expected, and not in the interval, the patient being thus spared all the enervating effects of the drug. With individuals who live mainly by their mental efforts this may be an extremely important desideratum, for I am fully persuaded that no man's mind is up to par when that man is under a course of the bromides. But it is not every case that can be safely treated in this way, for while in some the epilepsy will be held perfectly in abeyance, in others, when thus checked at its regular periods, it will break out, often with increased violence, at unusual times, then necessitating the continued treatment. Every quasi-periodical case should, for this reason, be carefully studied.

An epilepsy that is inter-convertible with a migraine must also be treated through the latter disease. In addition, then, to the anti-epileptic medication should be employed such remedies as extract of *cannabis indica*, caffeine, the alkalies, etc.

In conclusion, I desire to emphasize the fact that the

general health of every epileptic should be sedulously cared for by every resource of medical art. It is too much the custom to give the bromides and do nothing further.

Those individuals, not infrequently encountered, upon whom the bromides act so deleteriously, will usually respond, to a certain extent, to belladonna and the other remedies. But it has been my experience that such cases are usually very intractable; so that such a peculiar susceptibility to the bromides is of great prognostic value.

A special method has lately been advocated by Dr. Gowers. It can be best described by him:

“Begin with doses of two to three drachms of bromide every second or third morning, and increase the dose to four drachms every fourth morning, and six drachms or an ounce every fifth morning. . . . The object is to give the nervous system, as it were, a series of blows with bromide in order to facilitate the occurrence of the condition which bromide produces in patients who are cured of epilepsy by its use. . . . The maximum dose should be reached in two to three weeks, repeated three or four times, and the doses then gradually reduced, so that the whole course lasts six or seven weeks.” *

I am sorry to say that a trial of this method upon six patients failed to give as favorable results as the continuous bromide treatment, although the precautions recommended by Dr. Gowers were carefully observed.

I look to the future for the specific for epilepsy. In the present condition of our knowledge I do not believe that we can do more than check the manifestations and the progress of the disease; and my paper is intended simply as a contribution to the rational medicine of the subject.

* *Op. cit.*, p. 259.

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